



FIG. 1

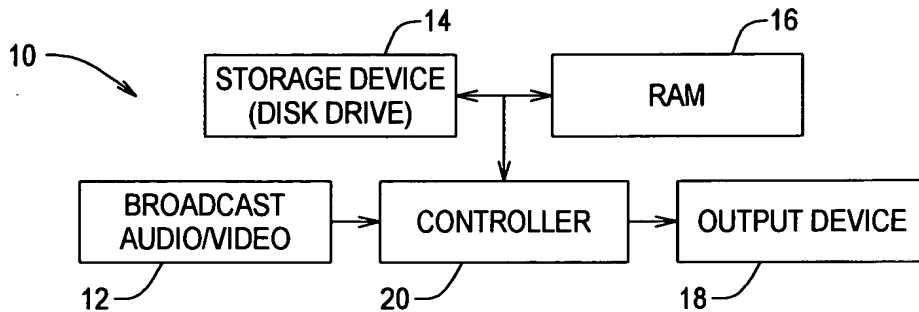


FIG. 2

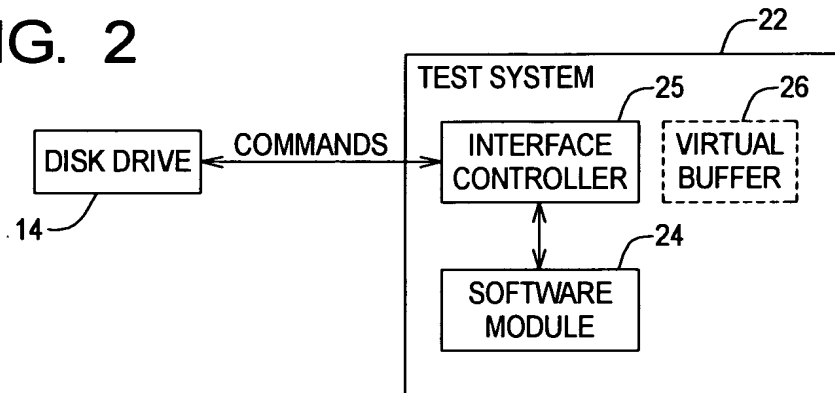
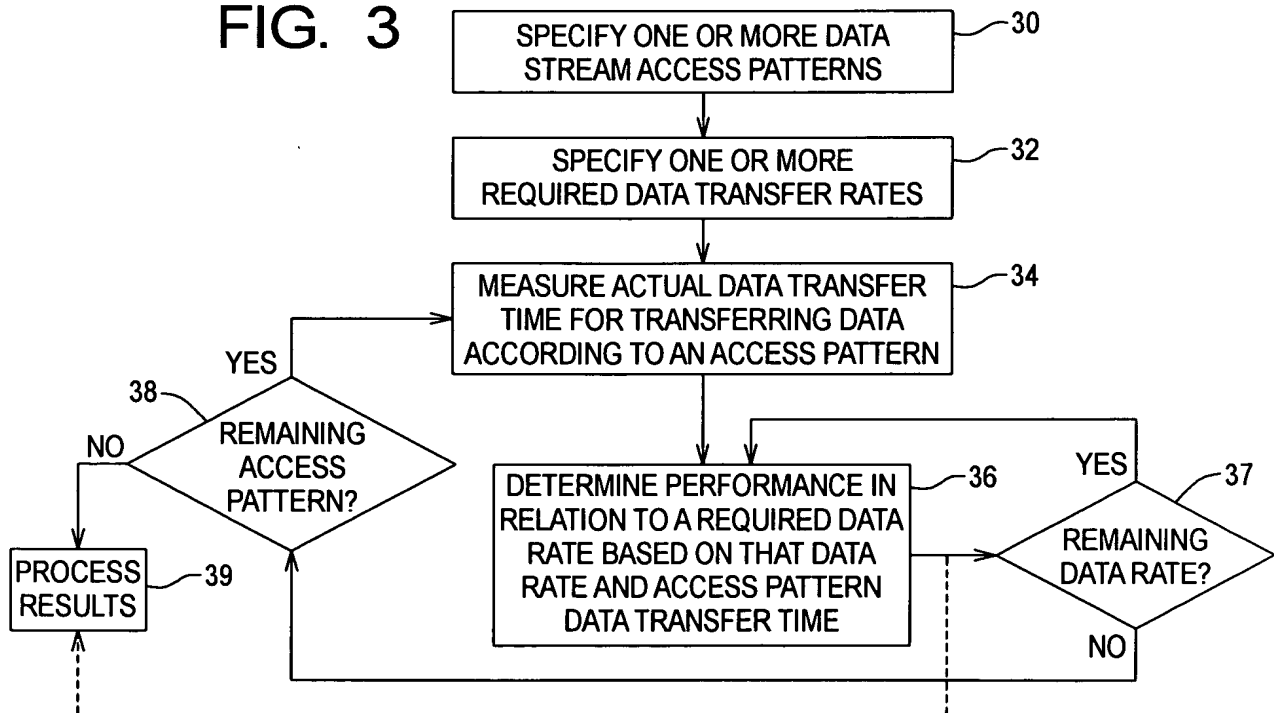


FIG. 3



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**FIG. 4**  
THROUGHPUT TESTING

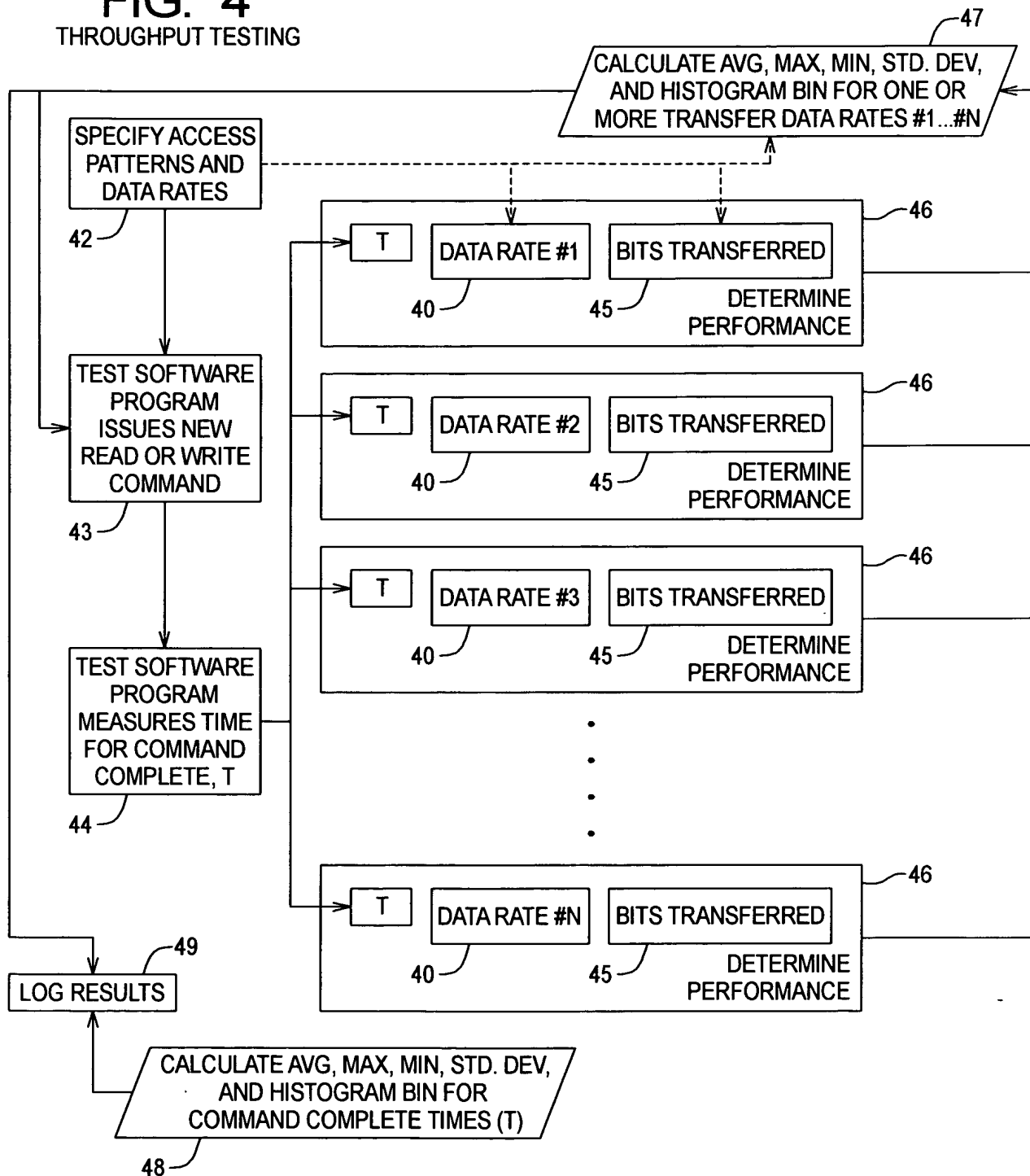


FIG. 5A

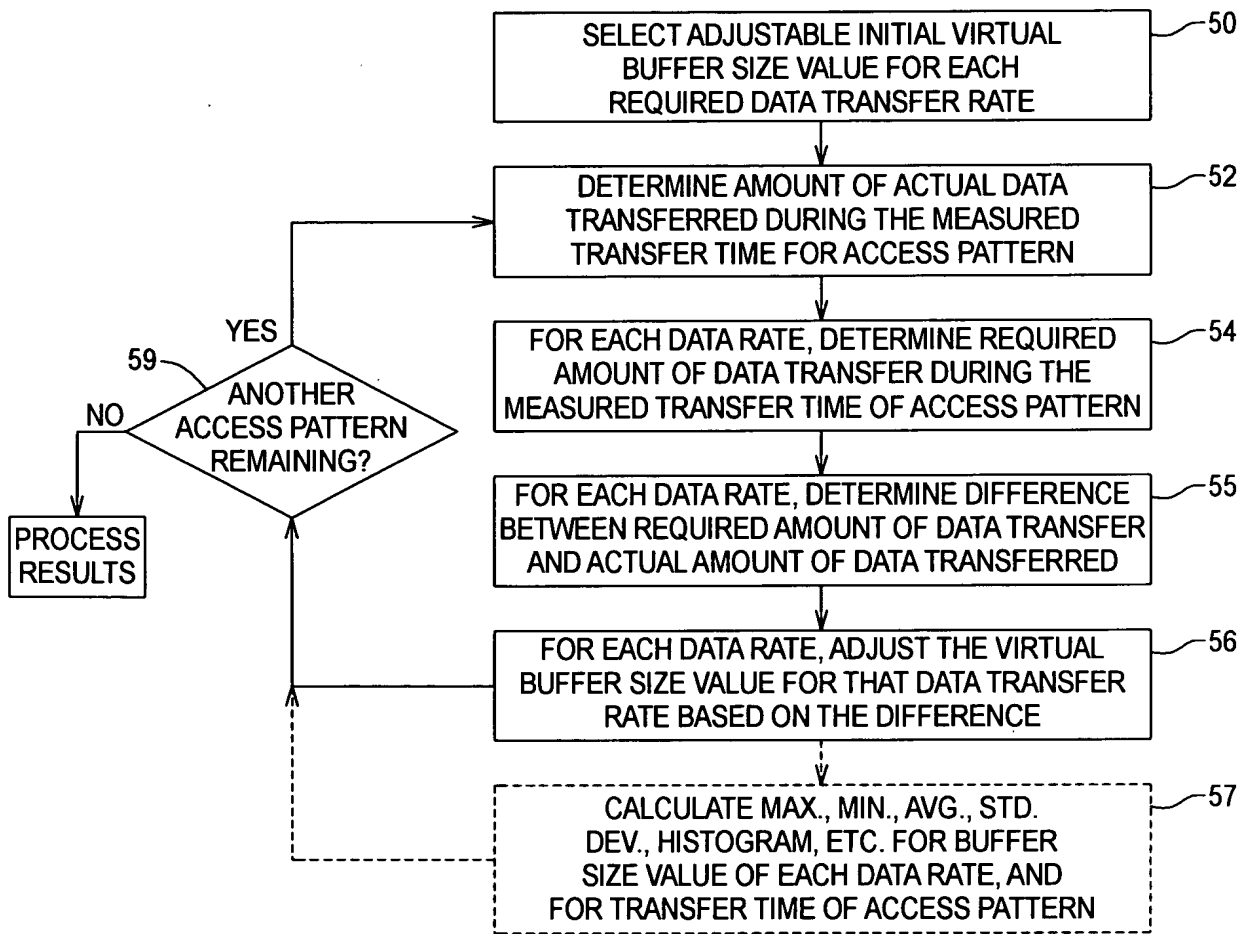
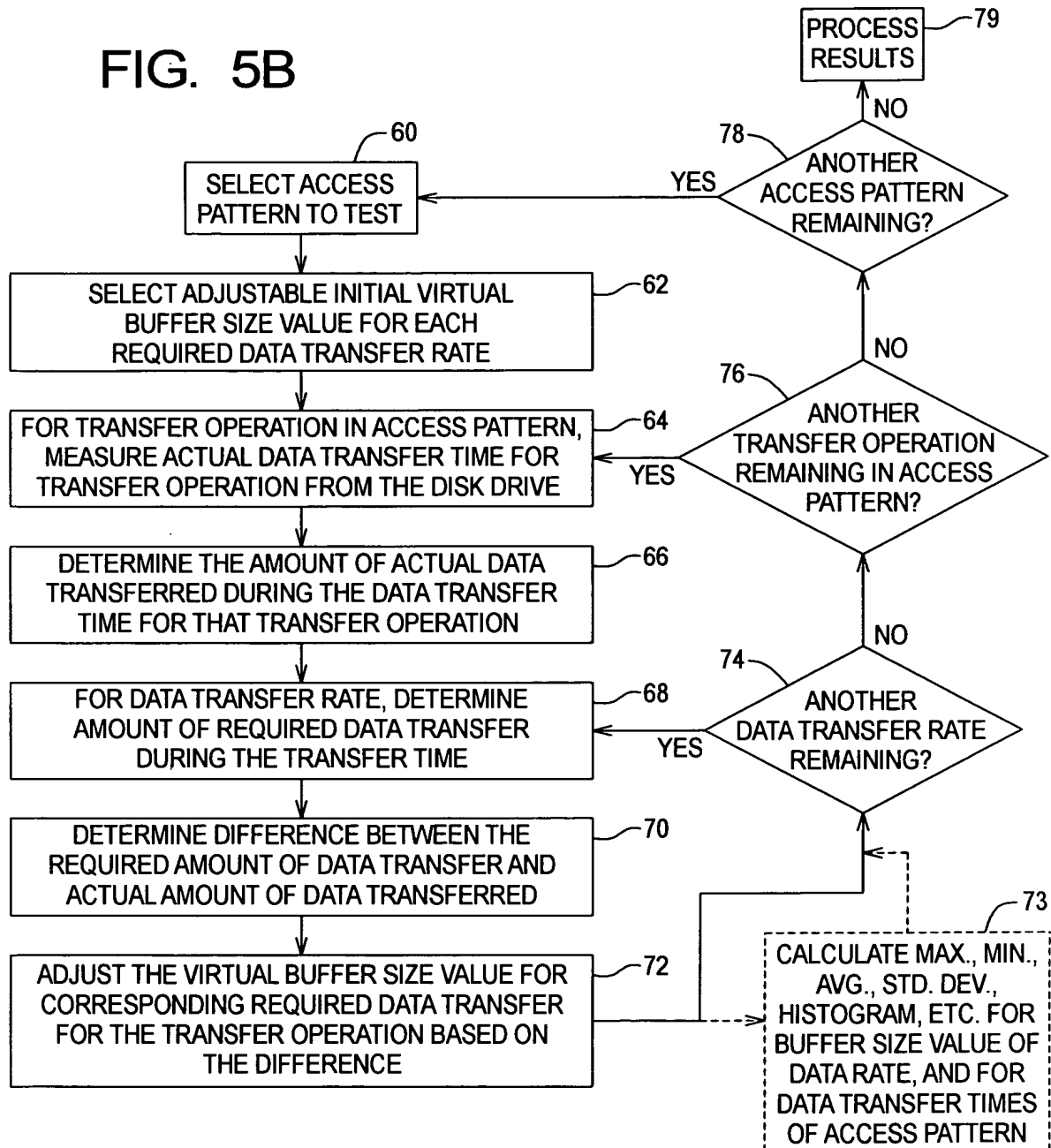


FIG. 5B



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**FIG. 6A**  
 THROUGHPUT TESTING USING  
 VIRTUAL BUFFER MODELS

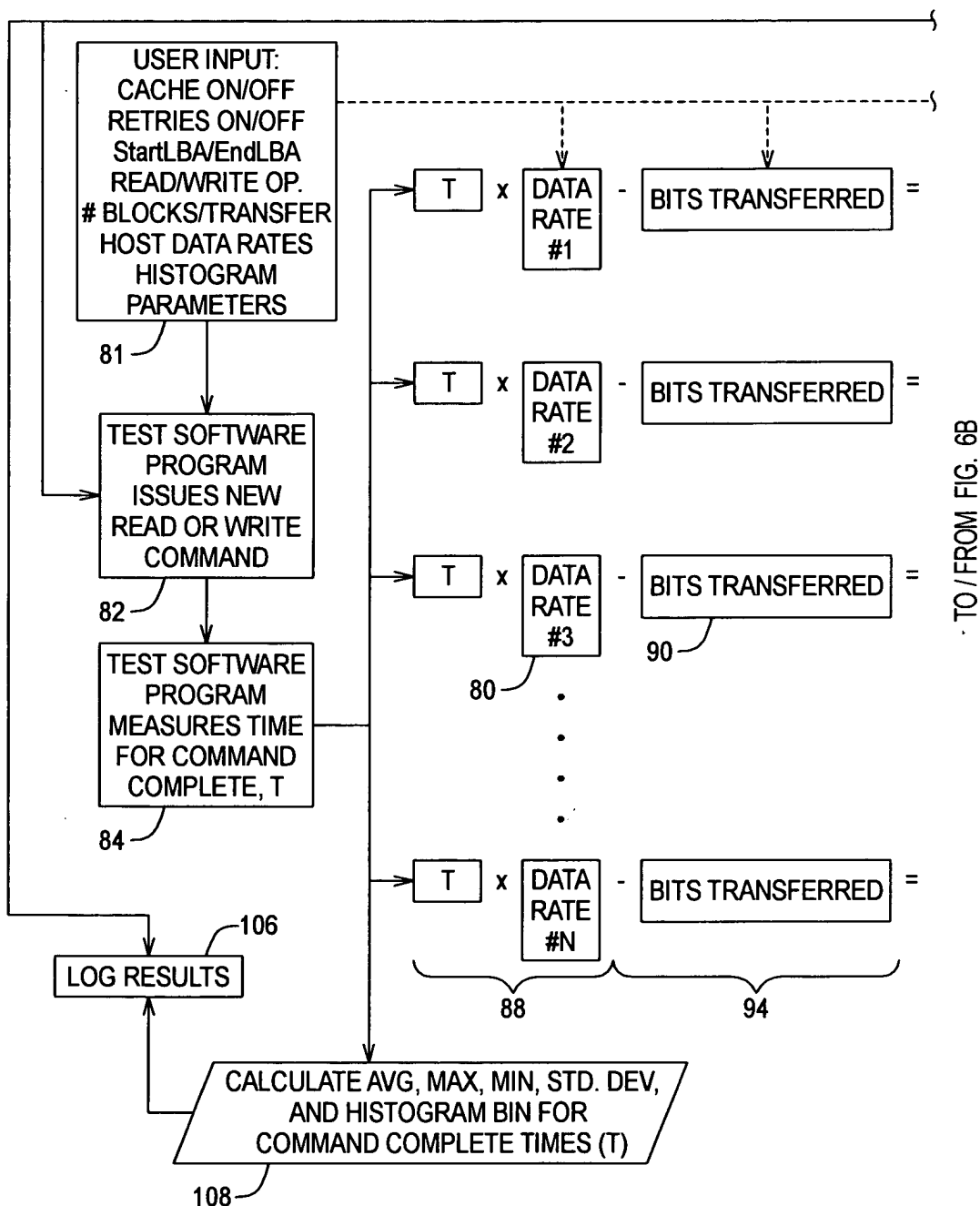


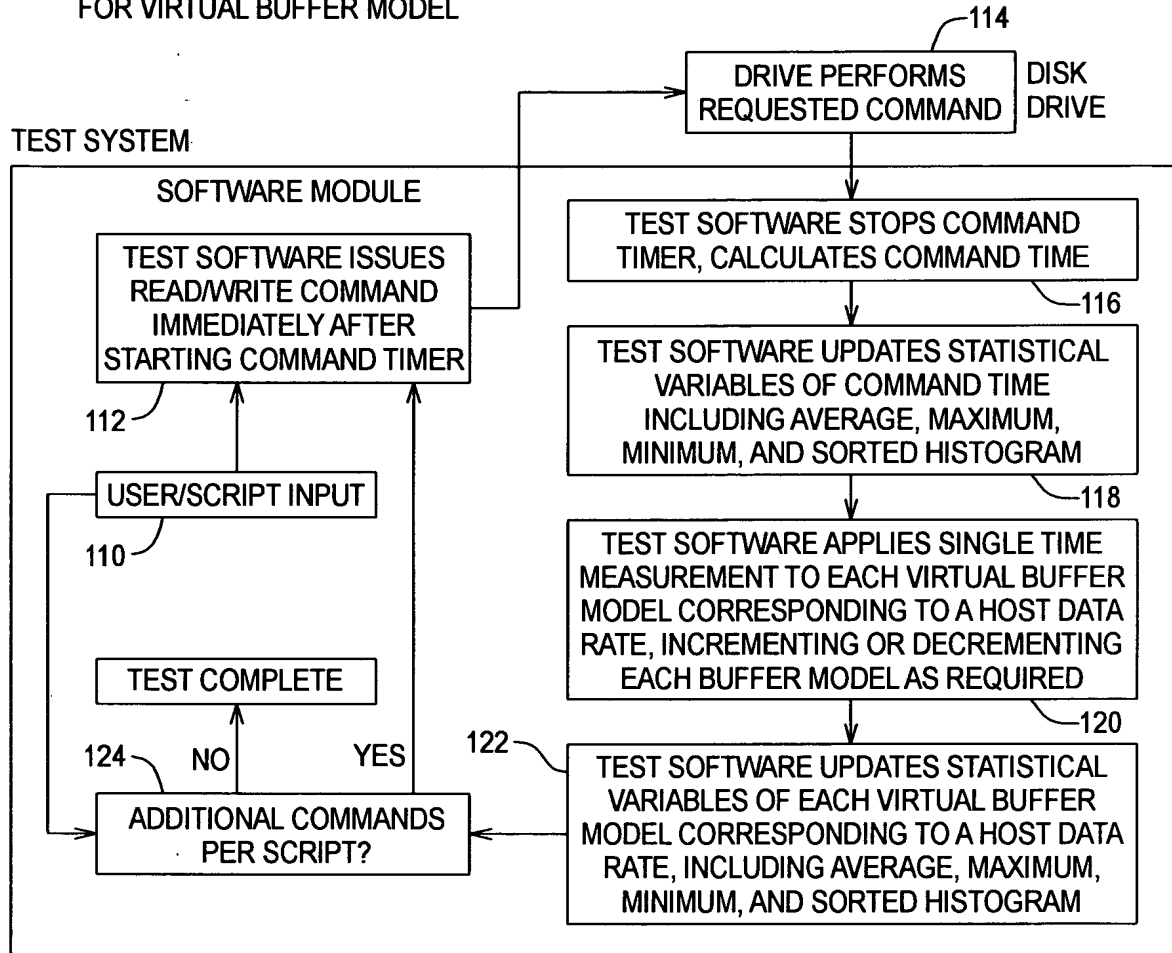
FIG. 6A is a flowchart illustrating a process for calculating average, maximum, minimum, standard deviation, and histogram bin for one or more transfer data rates. The process starts with a block 104: "CALCULATE AVG, MAX, MIN, STD. DEV, AND HISTOGRAM BIN FOR ONE OR MORE TRANSFER DATA RATES #1...#N". This block is preceded by a dashed line and followed by a solid line, indicating a loop or continuation. Below block 104, the process is detailed for each data rate (e.g., #1, #2, #3, ..., #N). For each data rate, the process involves:

- Block 92: "SIZE VALUE INCREMENT (+) OR DECREMENT (-) VS. TRANSFER DATA RATE #1" (or #2, #3, ..., #N).
- Block 96: "CURRENT BUFFER SIZE VALUE FOR DATA RATE #1" (or #2, #3, ..., #N).
- Block 98: "ADJUSTED VIRTUAL BUFFER SIZE VALUE FOR DATA RATE #1" (or #2, #3, ..., #N).
- Block 100: "OVERWRITE" (or "OVERWRITE").
- Block 102: "IF < 0, SET TO 0" (or "IF < 0, SET TO 0").

The flowchart shows a sequence of operations for each data rate, with the "OVERWRITE" block (100) and the "IF < 0, SET TO 0" block (102) being repeated for each data rate. The "OVERWRITE" block (100) is shown as a single block for all data rates, and the "IF < 0, SET TO 0" block (102) is shown as a single block for all data rates. The flowchart is labeled "TO / FROM FIG. 6A" on the left side.

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**FIG. 7**  
TEST SOFTWARE FUNCTION FLOWCHART  
FOR VIRTUAL BUFFER MODEL



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FIG. 8A

TO / FROM FIG. 8B

TABLE 1

ACCESS PATTERN	TEST TIME (MINUTES)	RD. OR WRT.	SILENT SEEK	CACHE R&W	nb	TOTAL XFER'S	STREAM1 START
OD SEQUENTIAL	0.7	WRT.	ON	ON	256	983040	0
ID SEQUENTIAL	0.6	RD.	ON	ON	256	983040	maxlba- 1500001
ID SEQUENTIAL	0.7	WRT.	ON	ON	256	983040	maxlba- 1500001
DUAL STREAM FS	22.2	WRT./ WRT.	OFF	ON	4096	1572864	0
DUAL STREAM O.D. 1/3	20.2	WRT./ RD.	OFF	ON	4096	1572864	0
DUAL STREAM I.D. 1/3	21.2	WRT./ RD.	OFF	ON	4096	1572864	2/3 x maxlba
RANDOM FS	1.7	RD.	OFF	OFF	256	983040	0
RANDOM FS	1.7	WRT.	OFF	OFF	256	983040	0
RANDOM FS	3.2	RD.	OFF	ON	1024	3932160	0



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FIG. 8B

STREAM2	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR	TR
START	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
N/A								102	100	98	96	94	80	70	60	50	40	30		
N/A											135	130	125	120	100	80	60	40		
N/A								102	100	98	96	94	80	70	60	50	40	30		
max/ba- 1500001					100	98	96	94	92	90	88	86	70	60	50	40	30	20		
max/ba/3	110	108	106	104	102	100	98	96	94	92	90	80	70	60	50	40	30	20		
max/ba- 1500001					100	98	96	94	92	90	88	86	70	60	50	40	30	20		
max/ba												44	42	40	30	25	20	10		
max/ba												44	42	40	30	25	20	10		
max/ba						92	90	88	86	84	82	80	70	60	50	40	30	20		

TO / FROM FIG. 8A

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## FIG. 9

THROUGHPUT SUMMARY- TABLE 2

SECTORS PER TRANSFER (ACCESS UNIT)	STREAMING OPERATION	DATA THROUGHPUT PER STREAM (MEGABITS PER SECOND)
256	SEQUENTIAL	90 Mbps/50 Mbps*
	DUAL STREAM	15 Mbps
	RANDOM	20 Mbps
2048	SEQUENTIAL	NA
	DUAL STREAM	15 Mbps
	RANDOM	50 Mbps
4096	SEQUENTIAL	NA
	DUAL STREAM	NOT TESTED
	RANDOM	60 Mbps

\* RESULTS INDICATE DATA CACHING ENABLED / DISABLED

### THROUGHPUT CRITERIA

- > SEQUENTIAL TEST, VIRTUAL BUFFER < 1MB
- > DUAL STREAM TESTS, VIRTUAL BUFFER < 2MB (1MB PER STREAM)
- > RANDOM TESTS, VIRTUAL BUFFER < 2MB

## FIG. 10

